

# इंटरनेट

# मानक

## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10562 (1983): Sketch pen, fibre-tip [CHD 14: Printing, Inks, Stationary and Allied Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



*Indian Standard*  
SPECIFICATION FOR  
SKETCH PEN, FIBRE-TIP

UDC 686.863.74



© Copyright 1983

**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR SKETCH PEN, FIBRE-TIP

Pens Sectional Committee, CPDC 16

*Chairman*

SHRI P. R. MALHAN

*Representing*

Office of the Development Commissioner, Small  
Scale Industries ( Ministry of Industry ),  
New Delhi

*Members*

- SHRI P. R. SINGH ( *Alternate to*  
Shri P. R. Malhan )
- SHRI K. K. CHARLA                      Ambitious Gold Nib Manufacturing Co Pvt Ltd,  
New Delhi
- SHRI B. R. CHARLA ( *Alternate* )                      Luxor Metaltec ( India ) Pvt Ltd, New Delhi
- SHRI A. K. JAIN                      Luxor Pen Co, New Delhi
- SHRI D. K. JAIN
- SHRI R. B. SUBRAMANIAN ( *Alternate* )                      South India Pen & Plastic Industries, Bombay
- SHRI S. M. JALAN
- SHRI K. K. SHARAFF ( *Alternate* )                      Industrial & Commerical Enterprises, Trichur
- SHRI M. L. JOSEPH                      Sulekha Works Ltd, Calcutta
- SHRI N. G. MAITRA
- DR S. D. NANDI ( *Alternate* )                      Controllor of Stationery, Government of India,  
Stationery Office, Calcutta
- SHRI H. MITRA
- SHRI S. B. BANDHYAPADHYA ( *Alternate* )                      Calcutta Pen Manufacturers & Dealers Association,  
Calcutta
- SHRI N. R. PUNJABI
- SHRI C. R. POONATER ( *Alternate* )                      All India Plastics Manufacturers' Association,  
Bombay
- SHRI G. D. RATHOD
- SHRI S. C. MEHTA ( *Alternate* )                      Wimco Pen Co, Bombay
- SHRI KHUBILAL JUGRAJ RATHOD
- SHRI BALKRISHAN D. SANGHVI                      Balkrishna Pen Private Ltd, Bombay
- SHRI JAYANT D. SANGHVI ( *Alternate* )                      Sethi Writing Instruments Pvt Ltd, Calcutta
- SHRI P. D. SETHI
- SHRI S. K. SETHI ( *Alternate* )                      Directorate General of Technical Development,  
New Delhi
- SHRI P. P. SHARMA
- SHRI N. K. AGARWAL ( *Alternate* )                      Director General, ISI ( *Ex-officio Member* )
- DR A. S. SETHI,  
Director ( Consr Prod & Med  
Instrs )

*Secretary*

SHRI J. P. MEHTA  
Deputy Director ( Consr Prod & Med Instrs ), ISI

( *Continued on page 2* )

© Copyright 1983

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* ( XIV of 1957 ) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

( Continued from page 1 )

Fibre Tip Pens Subcommittee, CPDC 16 : 4

*Convener*

SHRI CHIMANLAL P. SHETH

*Representing*

Chandra Industries, Bombay

*Members*

SHRI CHANDRAKANT C. SHETH ( *Alternate* to  
Shri Chimanlal P. Sheth )

SHRI S. D. DANDEKAR

Camlin Pvt Limited, Bombay

SHRI A. S. JOSHI ( *Alternate* )

SHRI A. K. JAIN

Luxor Metaltec ( India ) Ltd, New Delhi

SHRI D. K. JAIN

Luxor Pen Co, New Delhi

SHRI R. B. SUBRAMANIAN ( *Alternate* )

SHRI A. K. MITRA

Office of the Development Commissioner, Small  
Scale Industries, New Delhi

SHRI BALKRISHAN D. SANGHVI

Balkrishna Pen Private Ltd, Bombay

SHRI JAYANT D. SANGHVI ( *Alternate* )

# *Indian Standard*

## SPECIFICATION FOR SKETCH PEN, FIBRE-TIP

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 28 April 1983, after the draft finalized by the Pens Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

**0.2** This standard covers the requirements of essential materials, dimensions necessary for interchangeability and functional tests to ensure good writing quality and reasonable life.

**0.3** Sketch pens are generally used by students and artists for drawing, marking, writing captions. The pen has a fibre-tip nib which is again attached to a fibrous cartridge or absorbent material saturated with ink. An air-tight leak proof plastic or metal barrel encloses the cartridge. The tip of the pen has also a cap to cover it when not in use and for keeping it moist and ready for use. Ink remains in the fibre-tip nib in substantial quantity, because of the capillary action of porous holes, for instant writing.

**0.4** This standard contains clauses which call for agreement between the purchaser and the supplier and which permit the purchaser to use his option for selection to suit his requirements. The relevant clauses are **3.1, 5.4, 5.7, 6.1, 7.6 and 8.8.**

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

### 1. SCOPE

**1.1** This standard covers the requirements of fibre-tip sketch pen used for drawing and free hand marking. This standard does not cover micro-tip fibre pen.

---

\*Rules for rounding off numerical values ( *revised* ).

## **2. TERMINOLOGY**

**2.1** The nomenclature of various parts of fibre-tip sketch pen shall be as given in Fig. 1. For the purpose of this standard, the sketch pen shall be referred to as 'pen' only.

## **3. SHAPES AND DIMENSIONS**

**3.1** The sketch pen shall be made according to dimensions shown in Fig. 1 unless otherwise agreed to between the purchaser and the supplier.

**3.2** The illustration are diagrammatic only and not intended to give details of design.

## **4. MATERIALS**

**4.1** Body, cap and back plug of the pen shall be made of plastics. The plastics used shall be either medium grade polypropylene, or type 3 polystyrene conforming to IS : 2267-1972\* or low density polyethylene conforming to IS : 3395-1965† or high density polyethylene conforming to IS : 7328-1974‡ or polyvinyl chloride.

**4.2** Fibre-tip nib of the pen shall be made of fibrous materials like nylon-acrylic polyester, nylon, and rayon.

**4.3** Adopter for holding the fibre tip of the pen shall be made of type 3 polystyrene conforming to IS : 2267-1972\*.

**4.4** Cartridge ( absorbent material ) for containing ink shall be made of cellulose acetate polyester fibre or such other suitable material.

**4.5** Barrel containing the absorbent material shall be made of either polypropylene or PVC or polyethylene or cellulose acetate-butyrate corrosion resistance metal.

## **5. REQUIREMENTS**

**5.1** The length of the body of the pen shall be either as shown in Fig. 1 or it shall suit the length of the absorbent-material cartridge and the back-plug so that the writing fibre-tip shall have a good contact with the ink. The fibre-tip shall go at least 1 mm inside the cartridge.

**5.2** The body shall have a smooth finish and shall be free from other defects.

**5.3** The barrel containing absorbent material shall contain the inside material tightly.

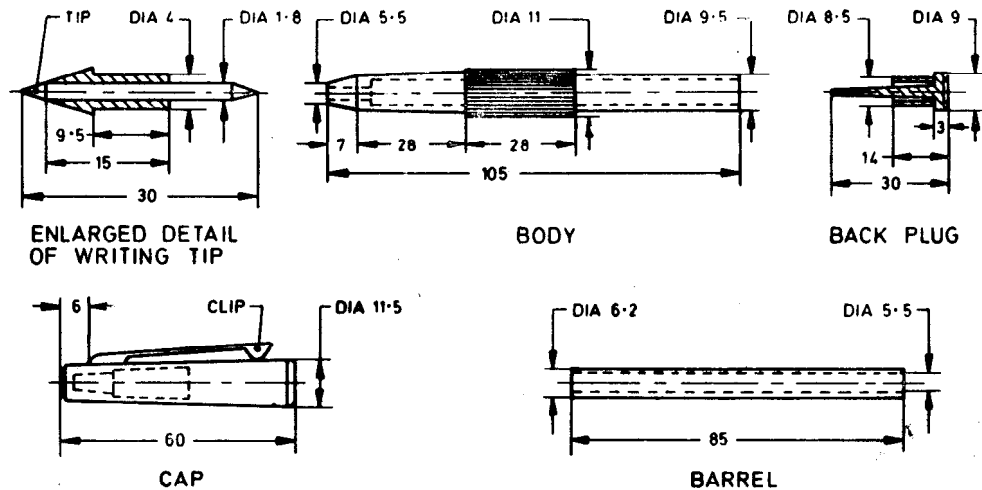
---

\*Specification for polystyrene moulding materials ( *first revision* ).

†Specification for low density polyethylene materials for moulding and extrusion.

‡Specification for high density polyethylene materials for moulding and extrusion.





All dimensions in millimetres.

FIG. 1 DETAILS OF SKETCH PEN, FIBRE TIP

**5.4** The fibre-tip shall be machined at the writing end to suitable shape so as to have the diameter as agreed to between the purchaser and the supplier.

**5.5** The adopter shall be punched or shall have a groove for using adhesive so that the writing tip is held firmly by the adopter and shall not go inside under normal or abnormal writing pressure.

**5.6** The cap shall be so made as to cover the fibre tip fully from outside atmosphere so that it remains moist with ink when the pen is capped.

**5.7** A pocket clip if provided, as agreed to between the purchaser and the supplier, shall be suitably affixed with the cap of the pen. The tip of the clip shall be rounded smooth so that it does not tear the cloth when clipped in and out and shall have a reasonably tight grip.

**5.8** All parts of the pen of same size and make shall be interchangeable. The finish of external surface shall be smooth, and shall not have scratches, blisters, pits, sharp edges and other defects. The internal surface shall also be smooth and free from sharp edges, feathers and other defects.

## 6. SAMPLING

**6.1** Sampling procedure and acceptance criteria for sketch pen, fibre tip shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix A.

## 7. TESTS

**7.1 Starting Test** — An unused pen shall be kept in the vertical position with the cap removed and the writing tip up for 30 minutes. The pen shall now be tested by drawing the writing tip 200 metres ( *Min* ) across a sheet of white super calendered printing paper conforming to IS : 1848-1971\*, at a rate of approximately 100 mm/s with normal writing pressure. The pen shall start drawing the continuous line within a distance of 15 mm from the starting point.

**7.2 Freedom from Clogging** — The pen is kept in the vertical position with the cap removed and the writing tip up for 4 hours. Then the pen is recapped and kept in the horizontal position for 24 hours. The pen shall again satisfy the requirements of starting test.

**7.3 Smearing Test** — After writing a few lines or letters on a sheet of white super calendered printing paper conforming to IS : 1848-1971\* and waiting for 10 seconds, the writing shall be rubbed lightly with hand. The ink shall have been dried, so that the writing could not be smeared.

---

\*Specification for writing and printing papers ( *first revision* ).

**7.4 Width of Marking** — The pen shall be used to draw a few straight lines on a sheet of white super calendered printing paper conforming to IS : 1848-1971\* holding the pen vertically under a mass of  $50 \pm 5$  g. The width of marking shall also be of uniform thickness.

**7.5 Clip Action** — The clip shall be slid over a metal plate, 3.0 to 3.2 mm thick and then removed. The clip shall return to the original position touching the surface of the cap. After this test is repeated 30 times, the clip is slid over a wooden sheet 0.15 to 0.25 mm and the wooden sheet is held in such a manner that the pen is in inverted vertical position. The strength of the clip shall be sufficient to keep the pen remain in such inverted vertical position for at least 30 minutes.

**7.6 Body and Cap Tightness** — Five unused pens shall be taken; each pen shall be uncapped and recapped to normal hand tightness 50 times. Then each pen shall be used to draw a 200 mm line on a sheet of paper. All the pens shall be recapped and total mass of the pens is determined. The pens are now kept in vertical position with the tip and cap up for 24 hours. The total mass of the pens is determined again. The difference between the two total masses shall not exceed 15.0 mg. Unless otherwise provided for in an agreement between the purchaser and the supplier, the test shall be carried out in a standard atmospheric condition according to IS : 196-1966†.

**7.7 Length of Writing** — An unused pen shall be used for this test. A drum covered with white super calendered printing paper conforming to IS : 1848-1971\* shall be rotated so that its peripheral speed is 150 mm/s and the writing tip of the pen shall be made to touch the paper with a uniform normal writing pressure perpendicular to the point of contact. The pen shall have a slow movement parallel to the axis of the drum so that the lines drawn on the paper are continuous but not overlapping. Continuity of writing shall be judged by visual observation and interruption of continuity due to any necessary adjustment in the mechanism or change of paper rolls shall be neglected. The pen shall be able to draw a continuous line of 500 m minimum.

**7.8 Abrasion Test** — In the preceding test, the initial line width after 10 m of writing and the line width after 110 m of writing shall be determined. The second reading shall not be more than one and half times the initial line width.

**7.9 Hardness Test** — A sheet of paper shall be placed on a platform scale. The sample pen, with the refill propelled shall be held between 3.2 mm and 3.8 mm from the writing and at an angle of  $50^\circ$  from the horizontal without the hand touching the paper. A force of 9 kg shall

\*Specification for writing and printing papers ( *first revision* ).

†Specification for atmospheric conditions for testing ( *revised* ).

be applied gradually and uniformly within a period of approximately 5 seconds and immediately released. The tip shall then be examined under microscope and there shall not be any major deformation on the tip.

**7.10 Accelerated Ageing Test** — After drawing a few straight lines on a sheet of white super calendered printing paper conforming to IS : 1848-1971\*, the pen shall be recapped to normal tightness and placed in an air-circulating oven at  $60 \pm 2^{\circ}\text{C}$  for 10 minutes with the writing tip up. Then the pen is removed from the oven and examined for leakage or distortion. The pen shall not leak nor show any distortion. The pen shall now be cooled to room temperature and used to draw some parallel straight lines on the same paper with the earlier lines drawn on it. There shall not be any change in colour or shade from earlier writing.

## **8. MARKING AND PACKING**

**8.1** The pen shall be marked with manufacturers' name or registered trade-mark on its body and cap.

**8.2** The pen may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors. may be obtained from the Indian Standards Institution.

**8.3** Pens shall be suitably packed in cartons or as agreed to between the purchaser and the supplier; however cartons shall be marked with the following details:

- 1) Manufacturers, name or registered trade-mark,
- 2) Colour of the ink,
- 3) Date or month and year of manufacture, and
- 4) Batch number.

---

\*Specification for writing and printing papers ( *first revision* ).

**APPENDIX A**

( Clause 6.1 )

**SAMPLING SCHEME AND CRITERIA FOR CONFORMITY  
FOR SKETCH PEN, FIBRE-TIP****A-1. LOT**

**A-1.1** In any consignment, all the sketch pen, fibre-tips manufactured under similar conditions, from the same raw materials, shall be grouped together to constitute a lot.

**A-2. SAMPLING**

**A-2.1** The number of sketch pens to be selected at random from a lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

**TABLE 1 SAMPLE SIZE AND CRITERIA FOR CONFORMITY**

| LOT SIZE         | FOR SHAPES AND DIMENSIONS<br>( 3.1 AND 3.2 ), AND REQUIRE-<br>MENTS ( 5.1 TO 5.8 ) |                 | FOR TEST FROM CL 7.1 TO 7.10 |                      |
|------------------|--|-----------------|------------------------------|----------------------|
|                  | Sample Size  | Acceptance Size | Sub-Sample<br>Size           | Acceptance<br>Number |
| (1)              | (2)  | (3)             | (4)                          | (5)                  |
| Up to 150        | 20   | 1               | 5                            | 0                    |
| 151 to 300       | 32   | 2               | 8                            | 0                    |
| 301 to 500       | 50   | 3               | 10                           | 0                    |
| 501 to 1 000     | 80   | 5               | 13                           | 0                    |
| 1 001 to 3 000   | 125  | 7               | 15                           | 1                    |
| 3 001 to 10 000  | 200  | 10              | 20                           | 1                    |
| 10 001 and above | 315  | 14              | 30                           | 2                    |

**A-2.2** The sketch pens in the sample shall be selected at random from the lot and in order to ensure the randomness of selection, IS : 4905-1968\* may be used.

**A-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY**

**A-3.1** The sketch pens selected according to **A-2.1** and **A-2.2** shall be inspected for dimensions and requirements ( 5.1 to 5.8 ). The sketch pen failing in any one or more of the requirements shall be considered as defective. The lot shall be considered as conforming to the require-

\*Methods for random sampling.

ments of the characteristics mentioned above if the number of defective sketch pens in the sample does not exceed the number given in col 3 of Table 1.

**A-3.2** The lot having been found conforming to **A-3.1** shall be tested for starting test ( **7.1** ), freedom from clogging ( **7.2** ), smearing test ( **7.3** ), width of marking ( **7.4** ), clip action ( **7.5** ), body and cap tightness ( **7.6** ), length of writing ( **7.7** ), Abrasion test ( **7.8** ), hardness test ( **7.9** ) and accelerated ageing test ( **7.10** ). For this purpose, a sub-sample of size given in col 4 of Table 1 shall be taken from the sketch pens selected as in **A-2.1** and **A-2.2**. Each of the sketch pens in the sub-sample shall be subjected to the tests mentioned above. A sketch pen failing in any one or more of the tests shall be considered as defective. The lot shall be considered as conforming to the requirements of the tests if the number of defectives in the sub-sample does not exceed the number given in col 5 of Table 1.